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ABSTRACT

In this study, the relationship of selected characteristics of temperament and ideational fluency in preschool children was explored. Subjects were 58 children ranging in age from 46 to 72 months, with a sample mean age of 57 months. All subjects were given the Multidimensional Stimulus Fluency Measure (MSFM), a test of ideational fluency. Their parents filled out the Behavioral Style Questionnaire, an assessment of preschool children's temperament. It was hypothesized that temperament characteristics of adaptability, approach, and persistence would be positively correlated with original, creative responses by children on the MSFM, and that distractibility and sensory threshold would be correlated negatively with original responses. Regression analyses revealed that distractibility and adaptability were related to original response scores on the patterns subtest of the MSFM, with a multiple r of .41, ($p < .05$). Personality variables as measured by temperament were related primarily to the ideational fluency task involving tactile manipulation of tangible stimuli and to the typical, or popular, responses of subjects. It is concluded that personality variables measured by the temperament scales are related to the generation of original ideas only within certain contexts. (Author/RH)

THE RELATIONSHIP OF SELECTED TEMPERAMENT CHARACTERISTICS TO CREATIVE POTENTIAL IN PRESCHOOL CHILDREN

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Running head: Temperament and Creativity

This paper was part of a larger study and is based on the thesis of the first author conducted under the direction of the second author. Requests for reprints should be sent to the second author at the Department of Family Relations and Child Development, College of Home Economics, Oklahoma State University, Stillwater OK 74078. A version of this paper was presented at the biennial meeting of the Society for Research in Child Development, Baltimore, April, 1987, under the title: "Personality correlates of creative potential in preschool children".

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Abstract

The relationship of selected temperament characteristics and ideational fluency in preschool children was explored in this study. The subjects were 58 children (31 boys and 27 girls) who ranged in age from 46-72 months, with a mean age of 57 months. The subjects were given the Multidimensional Stimulus Fluency Measure, a test of ideational fluency. The parents filled out the Behavioral Style Questionnaire, an assessment of preschool children's temperament. Regression analyses revealed that distractibility and adaptability were related to original scores on the patterns subtest of the MSFM, with a multiple r of .41, ($p < .05$). Temperament was shown to be related to original scores only on those tasks involving tactile manipulation of visible stimuli, but was related to total popular responses. Analyses revealed that distractibility, adaptability, and threshold yielded a multiple r of .43, ($p < .05$) with total popular scores on the MSFM.

The Relationship of Selected Temperament Characteristics to Creative Potential in Preschool Children

The United States Office of Education includes creative thinking among the abilities to be considered for participation in federally supported programs for the gifted and talented (Grinder, 1985). Although the importance of identifying and enhancing original thinking has been identified, until recently little work has been conducted which attempted to measure the original thinking of young children. Most studies of creativity have focused on only one aspect which might affect creativity: group vs individual administration (Milgram & Milgram, 1976), special training (Cliatt, Shaw, & Sherwood, 1980), gifted vs average children (Kershner & Ledger, 1985), and behavioral style (Singer & Rummo, 1973). These studies are limited because they neglect the many factors influencing creativity in young children. Moreover, the interplay between the factors could be important. Recently, work has been conducted by Moran and his associates to design a model of creativity which considers the many variables influencing creative thinking in young children (Sawyers, Moran, & Tegano, in press).

In the study of creativity and original problem-solving, it has been suggested that personality variables are at least as important as cognitive variables (Barron & Harrington, 1981; Dellas & Gaier, 1970). Few studies, however, have investigated the relationship of personality variables to creativity in young children. Internal locus of control has been linked to ideational fluency among second graders (Cohen & Oden, 1974) and in preschoolers (Sawyers & Moran, 1984). Starkweather (1971) has suggested that willingness-to-try-the-difficult and conformity were important components of creativity at this age.

One framework for looking at personality variables in young children involves the study of temperament. Thomas, Chess, Birch, Hertzig, and Korn (1963) found nine variables which constitute temperament. These are: activity level, rhythmicity, approach/withdrawal, adaptability, intensity, sensory threshold, mood, distractibility, and attention span/persistence.

Although numerous studies of temperament and children have been conducted, there is a surprising lack of studies which focus on temperament as it is related to or contributes to cognitive abilities. The case could certainly be made that at least some of the

temperament variables influence cognition, specifically problem-solving. For example, the approach/withdrawal dimension appears similar to the exploratory behavior that Burton White (1975) suggested as critical to problem-solving; attention span has been discussed as an important feature in children's learning literature (Stevenson, 1972); and Kaufman (1979) labeled the third factor he uncovered in the analysis of the Wechsler tests as "freedom from distractibility". In studies of infants, Sostek and Anders (1977) have found some of the temperament variables (e.g., intensity) related to mental scores on the Bayley scales.

Studies directed at the investigation of the relationship of personality to creativity in preschool children have been hindered by the lack of reliable and valid measures of this age group. Recent research efforts, however, have led to an improvement in this situation. Hubert, Wachs, Peters-Martin, and Gandour (1982) found the Behavioral Style Questionnaire (BSQ) which assesses the temperament variables identified in the NYLS to have a high test-retest reliability and acceptable measures of internal consistency. Carey, Fox, and McDevitt (1977) report the test-retest reliability (ages 3 to 7) as 0.89, with an alpha

reliability of 0.84. The Multidimensional Stimulus Fluency Measure (MSFM) which assesses the ideational fluency of preschool children has been reported to be relatively stable (r = 0.54) from ages 4 to 7 (Moore & Sawyers, in press) and to have acceptable internal reliability and construct validity (Godwin, 1984). Moran, Sawyers, Fu, and Milgram (1984) found the MSFM to be related to measures of fantasy and imaginative play. These recent research efforts may enable us to better measure the theoretical linkages between personality and cognitive factors in the developing creative potential of young children.

In this study, five[1] of the nine temperament characteristics were hypothesized to be related to ideational fluency in preschool children: approach, persistence, distractibility, sensory threshold, and adaptability. These five variables characterize an adaptable child, who is sensitive to environmental stimulation with the task persistence and low distractibility required to see a task through to completion. All of these characteristics have been cited by various investigators as components of creative thought. We hypothesize that adaptability, approach, and persistence would be positively correlated with

original responses on the MSFM and sensory threshold and distractibility would be correlated negatively.

Method

Subjects

The sample consisted of 31 boys and 27 girls enrolled in the Oklahoma State University Child Development Laboratory. The age range was 45-65 months, with a mean age of 57 months. This sample contained a seven percent international population and typically has an above average IQ. All children who met the age (minimum 3 years, 10 months) and consent requirements and who had been in the United States for at least one year, were used.

Instruments Used

Ideational Fluency. The Multidimensional Stimulus Fluency Measure (MSFM) was used to assess ideational fluency. These materials were adapted by Moran, Milgram, Sawyers, and Fu (1983) from those of Wallach and Kogan (1965), Ward (1968), and Starkweather (1971) for use with preschool children. Three subtests (instances, pattern meanings, and alternate uses) were used with two items per subtest. For the instances subtest, children name all the things they can think of that have a specific feature (i.e., round, red). In the

patterns task, children are handed three-dimensional styrafoam shapes, encouraged to turn them in any way desired, and asked, "What could this be?". For the uses task, children are asked what they could use items for (i.e., box, paper). Each test response was scored as popular or original (given by more or less than five percent of the normative group, respectively).

Temperament. The Behavioral Style Questionnaire (BSQ) developed by McDevitt and Carey (1978) was used to assess temperament. The BSQ is a 100-item questionnaire to be rated by the parent on a six-point scale from one (almost never) to six (almost always). A weighted procedure is then used to obtain scores on each of nine temperament dimensions (Field & Greenberg, 1982): activity, rhythmicity, adaptability, approach, threshold, intensity, mood, distractibility, and persistence.

Procedure

Sessions were conducted over a five-week period with each subject tested individually in a private room relatively free from external stimuli. Each of the two sessions took approximately 15-20 minutes per child. In session one, the instances and pattern meanings measures were given; in session two the alternate uses

task was given. The two testing sessions were approximately two weeks apart. During the testing, no time limits for responding were used. Three trained examiners obtained the measures; to help control for examiner bias, each child was tested by two different examiners whenever possible. Both sessions were audio-taped in order to aid in recording the responses. To ensure confidentiality, subject numbers were used on answer forms and tapes. The temperament questionnaire was sent home with each child participating in the study approximately one month after obtaining parental permission for children to participate in the study. In the letter, the parents were told that their child was participating in a study of temperament characteristics; but, at no time was the temperament study linked to the creativity research. To further ensure confidentiality, the child's research number was written on the questionnaire in the blank for the child's name.

Results and Discussion

Data were analyzed using an all possible subsets multiple regression with original responses on the ideational fluency measures serving as the criterion variable and the five target temperament variables (adaptability, approach, distractibility, persistence,

and threshold) serving as the predictors. Separate analyses were conducted for total original scores and original scores on each of the three subtests. A significant relationship was shown for distractibility with total original scores on the MSFM which yielded a correlation of -0.33, $p < .05$. The analysis of popular scores on the MSFM was conducted with each of the five target temperament variables. A significant correlation was shown for total popular scores with distractibility -0.31, $p < .05$. Age and gender effects were not evidenced. Table 1 lists the means and standard deviations for total original and popular scores on the MSFM and for the BSQ variables.

Insert Table 1 about here

The hypothesized relationship between temperament and creativity was only partially confirmed. The only significant relationship which the regression analysis revealed was that distractibility and adaptability yielded a multiple r of 0.41, $p < .01$, with original scores on the patterns task. A significant relationship was found for total popular scores with distractibility, adaptability, and threshold, yielding a multiple r of

0.43, $p < .05$.

Thus, personality variables as measured by temperament were related primarily to the ideational fluency task which involved tactile manipulation of tangible stimuli rather than only verbal responses, and to popular responses. Perhaps popular responses are more susceptible to a variety of influences than original responses, accounting for the relationship of distractibility, adaptability, and threshold to total popular scores. Popular scores have been shown to be more highly correlated to IQ (Moran, et al, 1983). There is also some suggestion that they appear to be more influenced by cultural differences (Marcos, 1987). It is interesting that the primary effect of temperament was on the nonverbal task. Certainly the presentation of a tangible stimulus might evoke a different response orientation in the children, thereby showing a different set of influences.

It appears from this data that the personality variables measured by these temperament scales are related to the generation of original ideas only within certain contexts (i.e., presentation of tangible stimuli). Whether these influences change as our focus moves from creative potential in preschoolers to creative products

and self-evaluation in older children is still an open question. Temperament, as a relatively stable personality characteristic, may play a different role in the creative process at different age levels or within different contexts.

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Footnote

[1]Due to the sample size, data analysis was limited to the five characteristics which were assumed to be most closely linked to creative potential. This preserved a more appropriate subject to variable ratio for the regression analysis.

Table 1

Means and Standard Deviations

Variable	Means	Standard Deviation
Original total	15.67	11.59
Popular total	15.57	6.90
Total frequencies	31.24	16.48
Activity	15.02	3.74
Rhythmicity	10.64	1.70
Approach	10.86	3.27
Adaptability	9.80	2.97
Intensity	20.48	5.17
Mood	12.53	3.85
Persistence	9.10	1.68
Distractibility	15.26	4.32
Threshold	17.69	4.20